

DOCUMENTED CHROMOSOME NUMBERS

1996.3. CHROMOSOME NUMBERS IN SOME SOUTH AFRICAN COMPOSITAE

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ABSTRACT

Observations reported here from 14 populations representing 13 species in 4 tribes of Compositae include first reports of chromosome number for *Heterolepis* (*H. aliena*; $2n = 12$, a new number for Arctoteae), for *Athanasia bremeri* ($2n = 20$, a new number for the genus), and for four species of *Ursinia* (*U. abrotanifolia*, *U. nudicaulis*, *U. pinnata*, and *U. punctata*; all $2n = 16$).

RESUMEN

Se presentan aquí las observaciones basadas en 14 poblaciones que representan 13 especies de 4 tribus de Compositae que incluyen los primeros recuentos de números cromosómicos de *Heterolepis* (*H. aliena*; $2n = 12$, un nuevo número para las Arctoteae), de *Athanasia bremeri* ($2n = 20$, un nuevo número para el género) y de cuatro especies del género *Ursinia* (*U. abrotanifolia*, *U. nudicaulis*, *U. pinnata* y *U. punctata*; todas ellas $2n = 16$).

Although chemical and numerical methods are currently in vogue, chromosome numbers continue to be important indicators of evolutionary (and taxonomic) relationships among plants (cf. Stebbins 1993). Some of the chromosome numbers reported here are first reports or are reports of new numbers for previously counted taxa and are especially likely to be important in phyletic hypotheses for the taxa from which the counts were made.

MATERIALS AND METHODS

Chromosome counts reported here were made by Strother from meiotic figures in acetocarmine-stained squashes (in Hoyer's mountant) of sporophytic (pollen parent) cells from floral buds fixed in a solution of 3 parts 95% ethanol: 1 part acetic acid (see Radford et al. 1974; Sharma and Sharma 1980). Pollens were stained with lactophenol-cotton blue; percentages were determined from 200 grains per sample. Source-plants were collected (Cape Province, South Africa, November 1994) and identified by Watson and Panero. Voucher specimens have been deposited in herbaria of Miami University (MU), National Botanic Gardens of South Africa (NBG), and University of Texas (TEX).

RESULTS AND DISCUSSION

Anthemideae

Athanasia bremeri Källersjö. $2n = 20$ (10 II, late diakinesis): Wuppertal Division, Grid 32 19 AC, Cederberg Valley, *Watson* 94-53. The count reported here is the first for the species and is a new number for the genus. Källersjö (1991) reported $2n = 16$ for eight other species of *Athanasia* and called attention to a report of $2n = 20$ for a species in the related genus *Lasiospermum* [i.e., report by Nordenstam (1967) for *L. brachyglossum* DC. from Cape Province, South Africa]. Perhaps the taxonomic position of *A. bremeri* should be reconsidered.

Cotula coronopifolia L. $2n = 20$ (10 II, late diakinesis and early first metaphase): Piketberg Division, Grid 32 18 DC, Berg River at N7, *Watson* 94-26. Numerous prior counts of $2n = 20$ and 40 have been reported for *C. coronopifolia* and diploid and/or polyploid counts based on $x = 13, 12, 10, 9$, and 8 have been reported for other cotulas (see standard indices of chromosome numbers in plants).

Oncosiphon grandiflorum (Thunb.) Källersjö. $2n = 16$ (8 II at late diakinesis, some cells with "sticky" bivalents; pollen stainability 4%): Cape Town Division, Grid 33 18 CB, Melkbostrand, *Watson* 94-23. $2n = 16$ (7 II + 2 I, 8 II, 1 chain of 4 + 6 II, late diakinesis, early first metaphase; pollen stainability 3%): Wuppertal Division, Grid 32 19 AA, on Pakhuispas, *Watson* 94-44. Mitsuoka and Ehrendorfer (1972) reported (as *Pentzia grandiflora*) $2n = 16$ for a plant from National Botanic Gardens of South Africa, Kirstenbosch. Nordenstam (1982) reported (as *Pentzia grandiflora*) $2n = 16$ for a plant grown in Lund from "Seeds from Kirstenbosch"

Oncosiphon suffruticosum (L.) Källersjö. $2n = 16$ (various configurations: 16 I, 7 II + 2 I, 2 chains of 3 + 4 II + 2 I, late diakinesis; pollen stainability 2%): Cape Town Division, Grid 33 18 CB, Melkbostrand, *Watson* 94-24. Mitsuoka and Ehrendorfer (1972) and Nordenstam (1969) reported

(both as *Pentzia suffruticosa*) $2n = 16$ for plants from National Botanic Gardens of South Africa, Kirstenbosch.

Ursinia abrotanifolia (R. Br.) Spreng. $2n = 16$ (8 II, late diakinesis): Worcester Division, Grid 33 19 CA, Bainskloofpas, *Watson* 94-68.

Ursinia nudicaulis (Thunb.) N.E. Br. $2n = 16$ (8 II, late diakinesis): Worcester Division, Grid 33 19 CA, Bainskloofpas, *Watson* 94-70.

Ursinia pinnata (Thunb.) Prassler. $2n = 16$ (8 II, late diakinesis): Wuppertal Division, Grid 32 19 AC, Cederberg Valley, *Watson* 94-51.

Ursinia punctata (Thunb.) N.E. Br. $2n = 16$ (8 II, late diakinesis): Worcester Division, Grid 33 19 AD, Michels Pass, *Watson* 94-60.

The counts reported here for ursinias are evidently first counts for the four species. Numerous counts of $2n = 16$ have been reported for other species of *Ursinia* (see standard indices). Nordenstam (1969) reported $2n = 14$ for *U. anthemoides* (L.) Poir. subsp. *anthemoides* and $2n = 16$ for *U. anthemoides* subsp. *versicolor* (DC.) Prassler. He suggested that the $2n = 14$ plants may have been derived as "... the result of a secondary reduction."

Arctoteae

Arctotis acaulis L. $2n = 18$ (9 per pole, second metaphase): Wuppertal Division, Grid 32 19 AC, Cederberg Valley, *Watson* 94-55. Ahlstrand (1979) reported $n = 9$ for a plant from the Botanical Garden of Lund identified as *A. acaulis*.

Arctotis undulata Jacq. $2n = 18$ (9 II at late diakinesis; 9 per pole, late first anaphase): Wuppertal Division, Grid 32 19 AC, Cederberg Valley, *Watson* 94-52. The count reported here is evidently the first for *A. undulata*.

Heterolepis aliena (L. f.) Druce. $2n = 12$ (6 II at late diakinesis and early metaphase): Wuppertal Division, Grid 32 19 AC, near Cederbergpas, *Watson* 94-49. The count reported here is evidently the first for *Heterolepis* and is evidently a new number for the tribe. Norlindh (1977) reported $x = 9$ and 15 for Arctotinae (to which he assigned *Heterolepis*), $x = 9$ for Gundeliinae, and $x = 5, 7$, and 8 for Gorteriinae.

Astereae

Chrysocoma longifolia DC. $2n = 18$ (9 II, late diakinesis): Clanwilliam Division, Grid 32 18 BB, 13 km from Clanwilliam town, Dwarsrivier Farm, *Watson* 94-38. Nordenstam (1967) reported $2n = 18$ for a plant (from Cape Province, South Africa) identified as *C. longifolia*.

Gnaphalieae

Leysera tenella DC. $2n = 8$ (4 II, late diakinesis; in the initial preparation from this gathering, one cell had evident chains, pairs, and univalents with sum of $2n = \text{ca. } 14\text{--}16$): Clanwilliam Division, Grid 32 18 BB, on

Pakhuispas near Kleinkiphuis, *Watson* 94-42. Bremer (1978) reported $2n = 8$ for a plant (from an unspecified site) identified as *L. tenella*.

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